# Building Resilience in small town disadvantaged communities through decentralized WASH infrastructure and services: Learnings from Chikkaballapura and Chintamani, Karnataka

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Technology Informatics Design Endeavour (TIDE NGO)

**Global South Academic Conclave on WASH and Climate 2026**

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CWAS CENTER FOR WATER AND SANITATION
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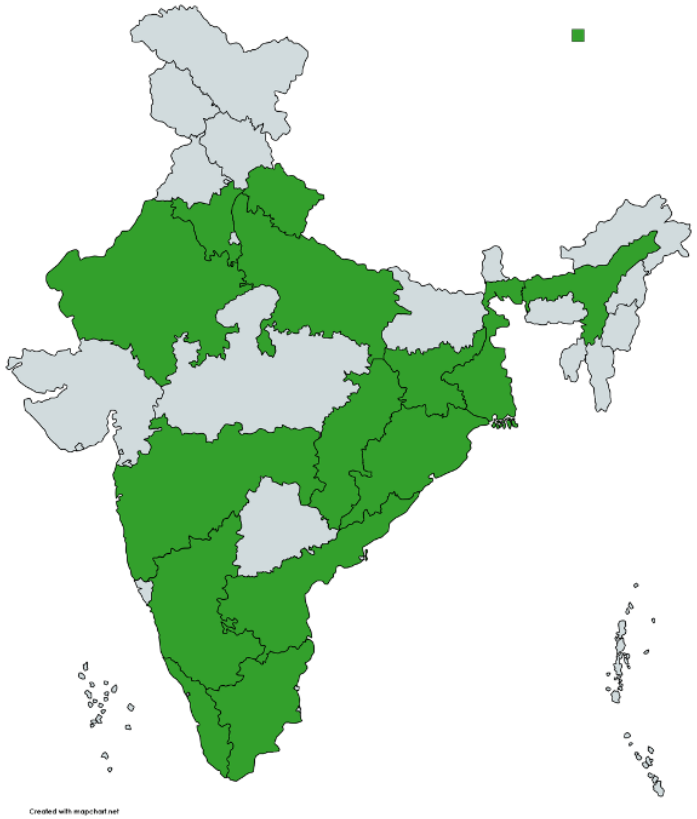
# Technology Informatics Design Endeavour (TIDE NGO)

## Geographic presence



**Vision**

A world where technology positively and equitably impacts societies and the environment

**Mission**

To provide technology solutions for livelihoods, sustainable communities and to build resilience

**Our focus area**

- Sustainable energy
- Skilling and Livelihoods
- Integrated Urban Water Management
- Model School Program

Active since **1993**

Active in **30+** towns and 4 states of India

**37** motivated professionals in India

# Program Approach - IWM

## 5+ years sustained technical engagement with BMZ and BORDA

Worked with Karnataka and Kerala

Total number of towns reached is 21

Implemented interventions on ground are more than 10

SDG 6, SDG 11 and SDG 13

Stakeholders- DMA, CMCs, KUWSDB, KUIDFC, Safai Karmachari commission

Water source & supply management

Wastewater treatment & reuse

Solid waste management

Health, safety & dignity of sanitation workers

**Beneficiaries**

Completed – 20,000

In pipeline – 2,16,651


# A Critical Urban Frontier - Why Small Towns Matter

Small towns house a large share of India's urban population (~35–44%)

Municipalities are the frontline institutions for service delivery

Population Range: ~5,000 to <100,000 (small/medium towns)

## Core Urban Challenges

Water Security
Sanitation Services
Solid Waste Management
Infrastructure & Governance Gaps

# Compounding Stressors

weak cost recovery

Lack of technical staff and enough manpower

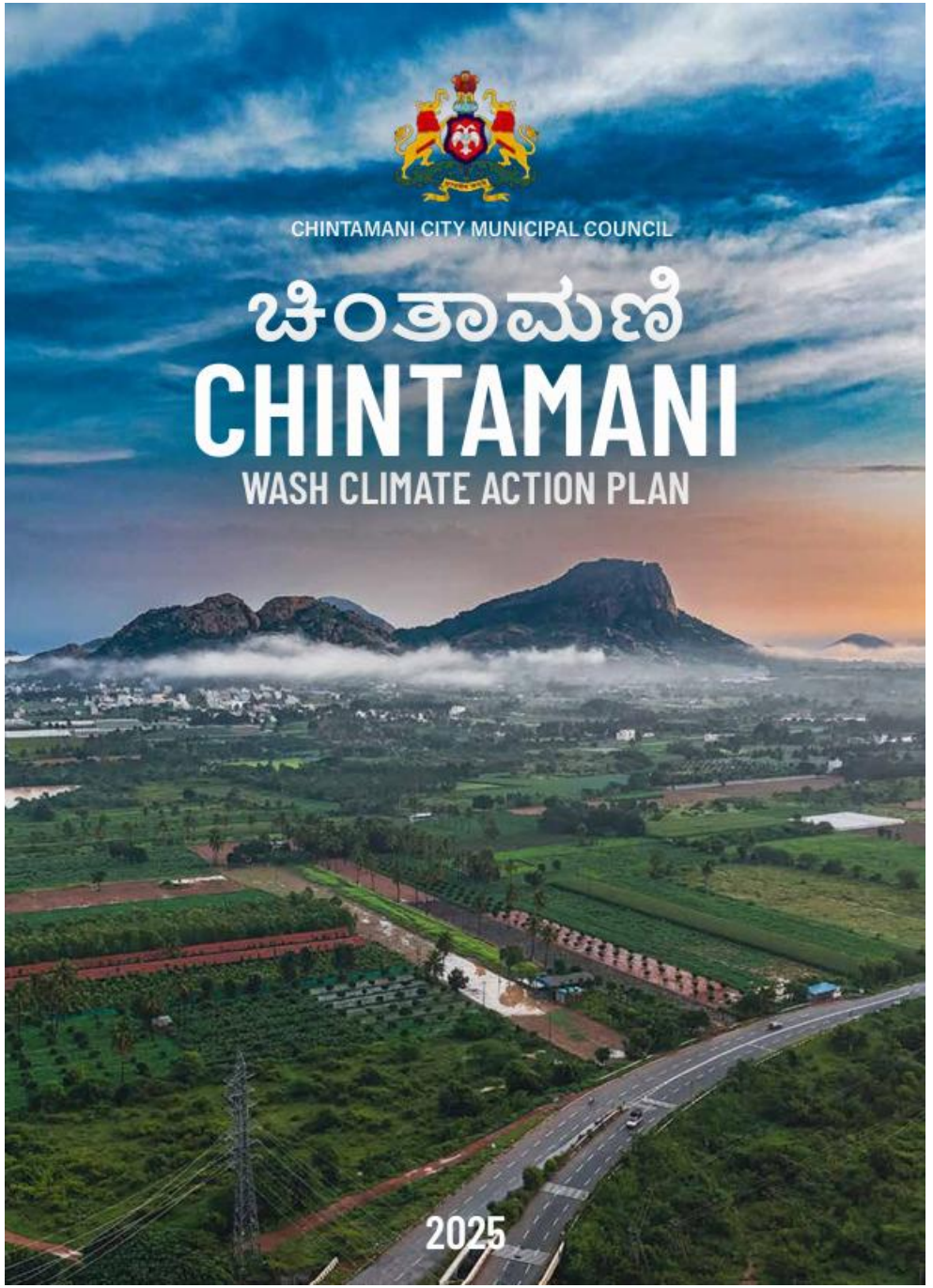
Limited municipal finances

Increasing climate variability

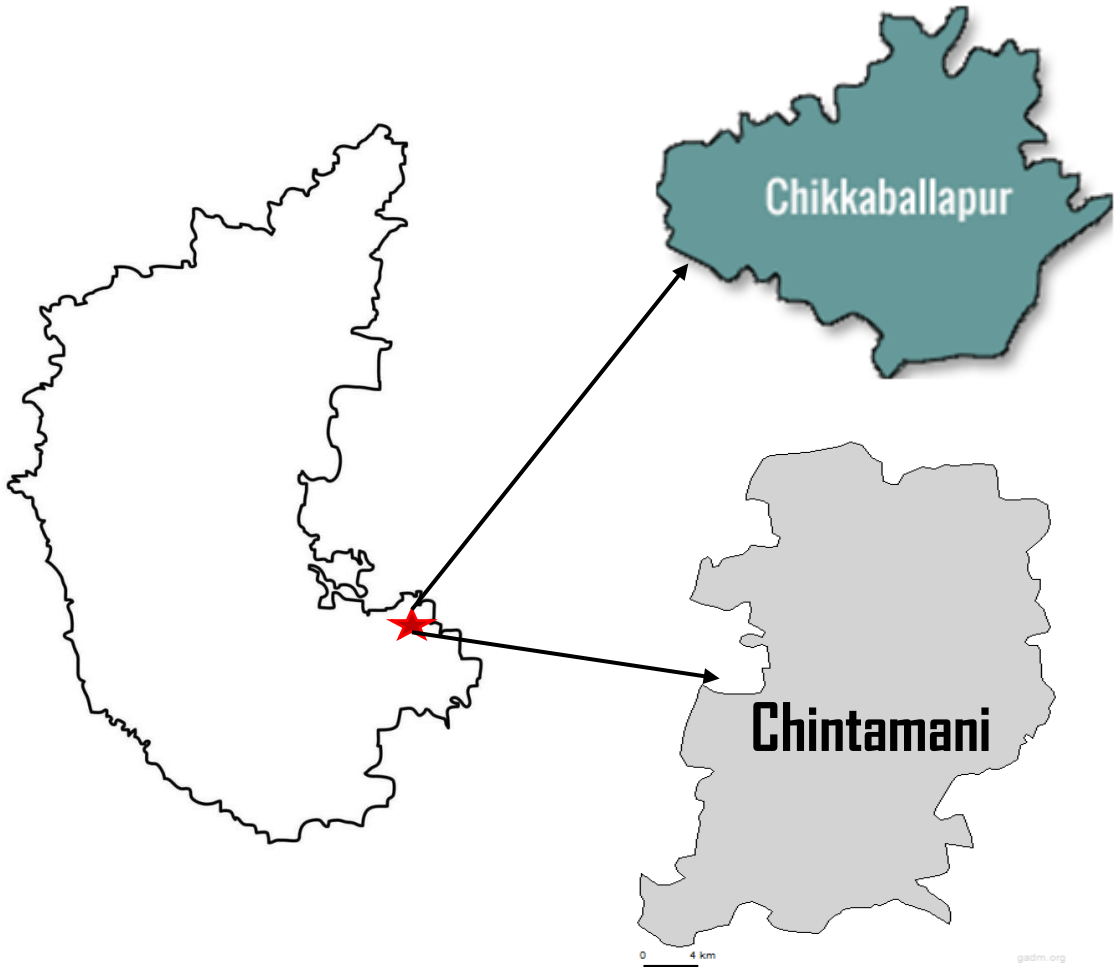
Fragmented governance & institutional capacity

**Result: Reactive crisis management**


Leh
Siliguri
Gwalior
Udaipur
Satna
Patan
Sagar
Ujjain
Ahmedabad
Jamnagar
Vadoda
Bhopal
Jabalpur
Rajkot
Junagadh
Surat
Indore
Nagpur
Nashik
Aurangabad
Mira Bhayandar
Thane
Mumbai
Pune
Solapur
Kakinada
CHINTAMANI
Vijayawada
Kolhapur
Bengaluru
Panaji
Chennai
Coimbatore
Tiruchirapalli
Tirunelveli
WRI India CAPs
CAPs prepared by the larger practitioner ecosystem
Supported by BORDA/TIDE/FISH
WRI INDIA


CHINTAMANI CITY MUNICIPAL COUNCIL
ಚಿಂತಾಮಣಿ
CHINTAMANI
WASH CLIMATE ACTION PLAN
2025

# Study Context




Both the towns located **45 to 75 km from state Capital Bengaluru**

Governed by **City Municipal Councils**

**Population Scale (2011 Census):**

- Chintamani city 76,068
- Chikkaballapura city 63,652

**Semi-arid Climate:** Characterized by **low and erratic rainfall**, high temperatures, and recurrent drought conditions.

# Why Decentralized WASH?

Decentralized systems allow phased, affordable implementation with localized approach

Modular and can expand with the growth of the town

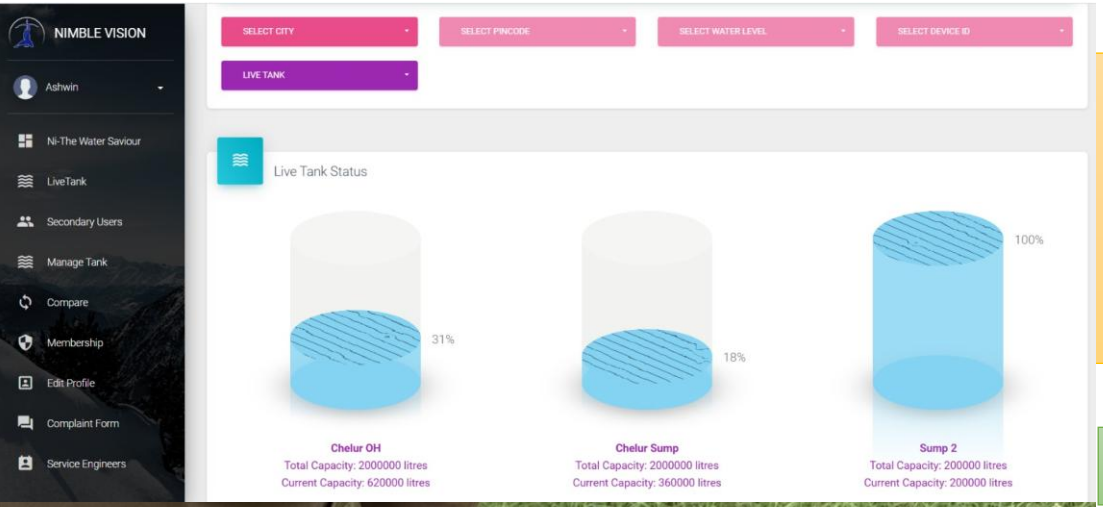
Align better with dispersed settlements, peri-urban areas, and mixed land-use patterns

Decentralized systems are more adaptable to climate variability through localized solutions

Decentralized WASH enables targeted service delivery for underserved and vulnerable communities

# Our focus is on

# Intervention 1: Water Supply (borewell)Automation in Chintamani




- **Interventions** – Deployment of GPRS + GSM–based IoT controllers, bulk flow meters, and sump-level sensors enabling automated pump operations, real-time monitoring, and predictive maintenance for 10 selective borewells connected to Chelur road pumphouse in Chintamani

- **Beneficiaries** – CMC, watermen and the aprx 3000HHs

- **Accountability & Ownership:** CMC manages daily operations using SOPs and dashboards, with technical design, training, and initial support provided by TIDE

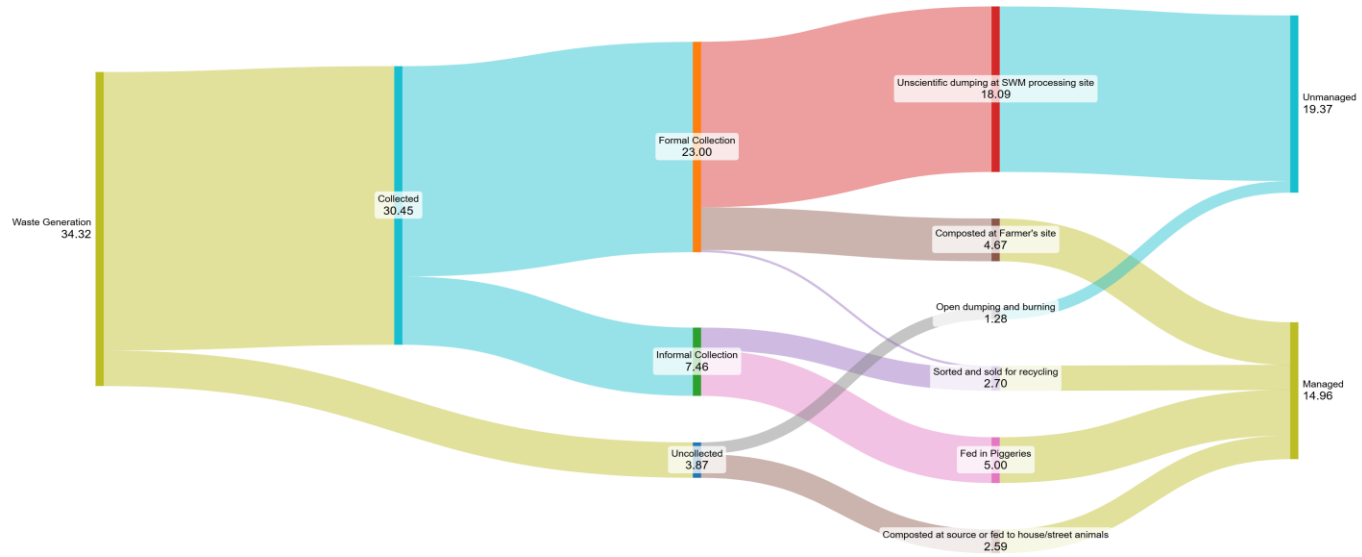
- **Impact-**
  - Reduced water wastage by 15–20%, saving approximately 25,000–30,000 liters per day (~9 million liters annually) and 18% reduction in electricity consumption

# Intervention 2: Decentralized Wastewater Management in Chikkaballapura

- **Approach** – 2 phase project from 2021- 2026
- **Interventions** – Simplified Sewer System, 10 KLD DEWATS, 20 KLD Humus Bioreactor
- **Beneficiaries** – 91 Households and 455 population
- **Total waste water treated-**10.95 MLD + 6.58 MLD Till January 2026
- **Reuse and Circularity:** Treated WW is reused for landscaping within the facility premises and the adjacent park, reducing freshwater demand.
- **Accountability & Ownership:** The CMC and the community manage daily operations, with technical support from TIDE.
- **Impact-**

a. Safe sanitation access for 91 households
b. Reduced wastewater stagnation and health risks
c. Lowered freshwater dependency through reused.

# Intervention 3: Solid Waste Management in Chikkaballapura and Chintamani




- **Approach** – 2 phase project from 2021- 2026

**Interventions** –

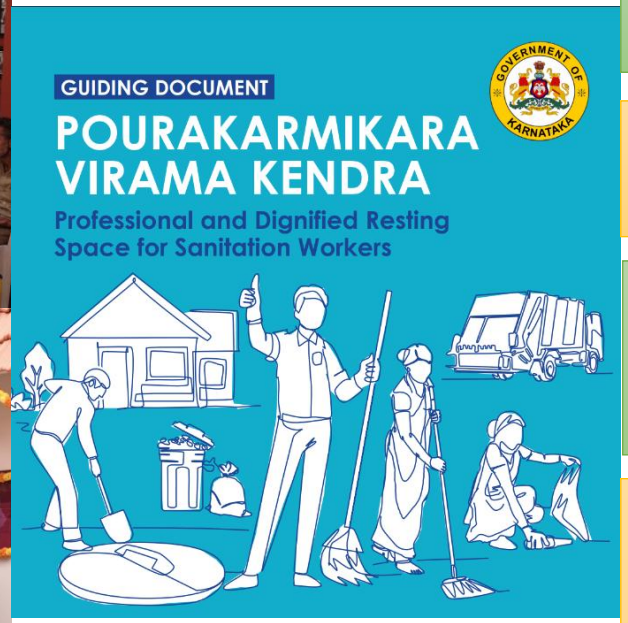
- Handover of pushcarts – 20 NOS
- Composting units installed (200kg capacity) – 5 pairs
- 2TPD DWCC in Chintamani – Upgradation and Operation
- 1.8TPD CDWM Facility in Chikkaballapura- strengthening of commercial dry waste management
- Route plan and GPS Installation for waste collection vehicles – more than 35 vehicles have been installed with GPS devices in both the town and Route planning for waste collection has been given to Chikkaballapura CMC

# Intervention 3: Solid Waste Management in Chikkaballapura and Chintamani

- **O&M model –**
  - Composting units are being operated by Sanitation workers + community mobilizers ( Daily wet waste is being dropped by the sanitation workers overseen by CMC hired community mobilizers)
  - 2TPD DWCC – SHG+ CMC model (SHG members will be trained to run the operations of the facility with the help of CMC
  - 1.8TPD CDWM facility – Pourakarmikas+ CMC model (Pourakarmikas are operating the facility under the guidance of CMC

- **Impact –**
  - Composting units -0.3 TPD wet waste from 3750 HHs is managed
  - 2TPD DWCC – 2TPD of dry waste is managed with the help of trained 20SHG members. The facility is designed with climate sensitive elements
  - 1.8TPD CDWM facility – Currently assessments are made to receive more waste at the facility, around 1.1TPD of dry waste is being sorted at the facility

# Intervention 4: Sanitation Worker Welfare




- **Approach** – 2 phase project from 2021- 2026
- **Interventions** – Pourakarmikara virama kendra facility in Chikkaballapura and Chintamani.
- **Beneficiaries** – 1687 including Pourakarmikas and their family
- **Accountability & Ownership:** The CMC and Purakarmikas are maintaining the facility
- **Salient features** – waterless urinals, lockers and janitors closet, drinking water facility, dining area and lounge
- **Impact-**
  - ➢ The dignity of sanitation workers was the central theme of this facility.
  - ➢ The facility has provided basic hygiene services which in terms has benefited the workers in their health conditions

# Key Insights from the ground

Selection of technology/system should be localized by considering the ground realities

Resilience is not only technical; it is social & institutional

Service resilience depends on workforce wellbeing

Integration across WASH sub-sectors is essential

Long-term handholding matters more than one-time assets

Ownership for long term sustainability

# Scalability & Replicability of interventions

**Modular, decentralized solutions allow towns to start small and expand as demand, finances, and capacity grow**

**Phased implementation aligned with municipal budgets and schemes (SBM, AMRUT, 15th finance commission, municipal funds) reduces financial risk**

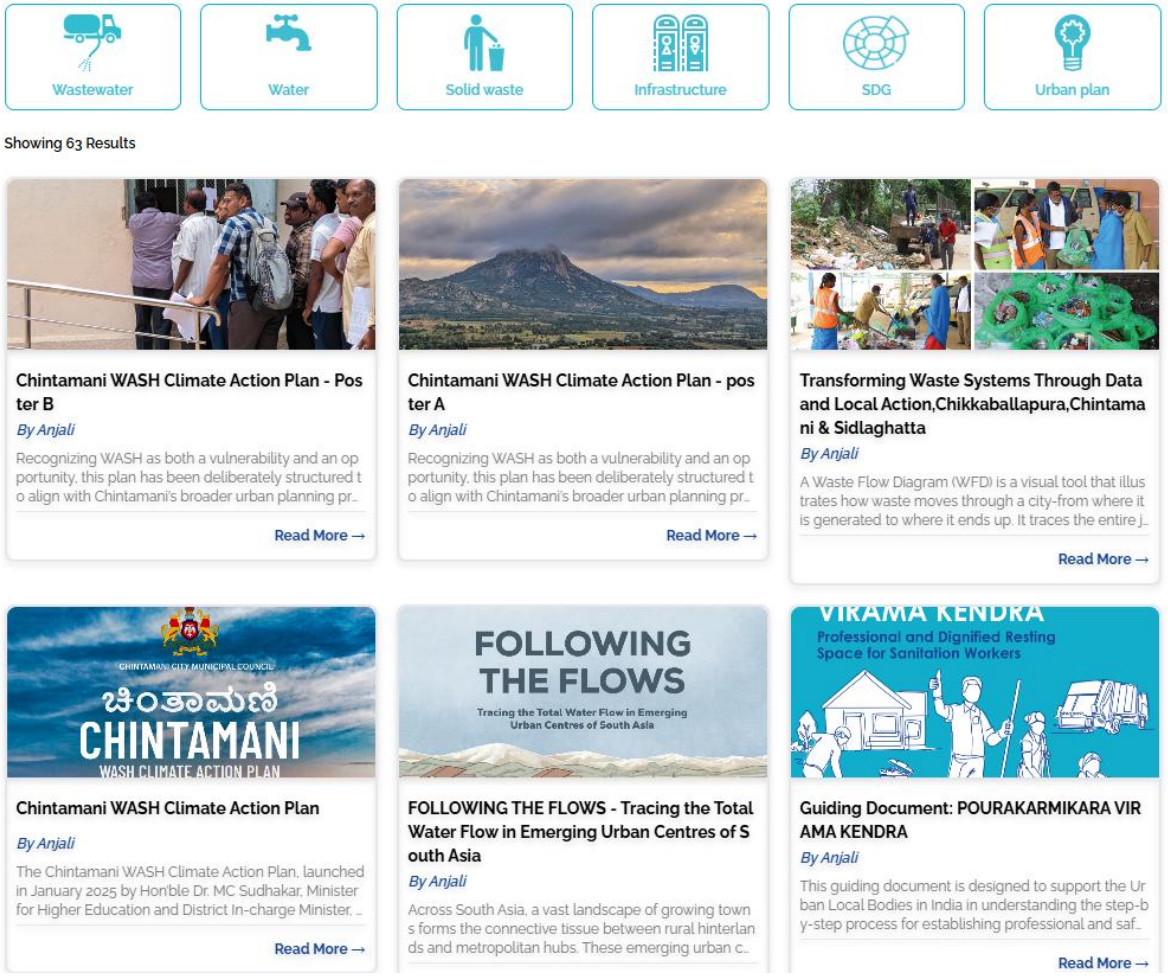
**Standardized designs with local customization enable faster replication across similar small-town contexts**

**Institutional embedding through SOP and staff training ensures long-term sustainability beyond project support**

# Conclusion

*Small towns can move from reactive crisis response to planned resilience when technology choices, institutional systems, and community needs are aligned. Unlike large cities shaped by uncontrolled growth, infrastructure, and fragmented planning, small towns still can guide WASH development in a strategic manner. Strengthening decentralized infrastructure and local institutions in these towns offers a realistic pathway to reliable services, environmental sustainability, and dignified living conditions.*

# You Can Explore our studies...




https://wash-towns.com/resources

# Thank You

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